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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte OSAMU IWASAKI

Appeal 2009-011115
Application 10/588,935¹
Technology Center 2800

Before JOSEPH F. RUGGIERO, MARC S. HOFF, and
CARLA M. KRIVAK, *Administrative Patent Judges*.

HOFF, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from a Final Rejection of claims 1-26. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

Appellant's invention concerns a liquid crystal display device using a planar lighting device. A transparent light guide plate includes a rectangular light exit surface, a thick portion substantially at the center in parallel with

¹ The real party in interest is Fujifilm Corporation.

opposing two sides, thin edge portions formed in parallel on both sides of the thick portion, and inclined rear portions whose thickness is reduced from the thick portion toward the thin edge portions to form inclined rear surfaces (Spec. 6). A “parallel groove” is formed in the thick portion to accommodate a bar-like light source. An end portion of the parallel groove is narrowed toward the rectangular light exit surface symmetrically with respect to a center line of the parallel groove, in the direction perpendicular to the rectangular light exit surface (Spec. 7-8).

Claim 1 is exemplary of the claims on appeal:

1. A transparent light guide plate, comprising:

a rectangular light exit surface;

a thick portion positioned at substantially a central portion of said rectangular light exit surface in parallel with opposing two sides of said rectangular light exit surface;

thin edge portions formed in parallel on both sides of said thick portion;

a parallel groove which accommodates a bar-like light source and is formed at substantially a center of said thick portion in parallel with said opposing two sides; and

inclined rear portions which are symmetrical with respect to a plane including a central axis of said bar-like light source and perpendicular to said rectangular light exit surface, and whose thickness is reduced from said thick portion toward said thin edge portions in a direction perpendicular to said opposing two sides to thereby form inclined rear surfaces on both sides of said parallel groove,

wherein an end portion of said parallel groove is narrowed toward said rectangular light exit surface symmetrically with respect to a center line of said parallel groove perpendicular to said rectangular light exit surface in

a sectional shape of said parallel groove in said direction perpendicular to said rectangular light exit surface, in accordance with a ratio of a peak value of illuminance or luminance of emitted light from said bar-like light source accommodated in said parallel groove at a first portion of said rectangular light exit surface corresponding to said parallel groove to an average value of said illuminance or luminance of said emitted light at second portions corresponding to said inclined rear portions, and

said light guide plate is formed of a single material with a uniform index of refraction.

The Examiner relies upon the following prior art in rejecting the claims on appeal:

Yokoyama	US 5,402,324	Mar. 28, 1995
Ide	US 2003/0210210 A1	Nov. 13, 2003
Furukawa	JP 05-2429320	Sep. 28, 1993
Aihara	JP 08-062426	Mar. 8, 1996
Kunishige	JP 11-149073	June 2, 1999

Claims 1-3, 5-18, 21, 23, 25, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Aihara in view of Furukawa.

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Aihara in view of Furukawa and Kunishige.

Claim 19 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Aihara in view of Furukawa and Ide.

Claim 22 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Aihara in view of Furukawa and Yokoyama.

Claims 20 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kunishige.

Throughout this decision, we make reference to the Appeal Brief (“App. Br.,” filed Oct. 3, 2008), the Reply Brief (“Reply Br.,” filed Mar. 20, 2009), and the Examiner’s Answer (“Ans.,” mailed Jan. 23, 2009) for their respective details.

ISSUES

Appellant argues, *inter alia*, that the Examiner used impermissible hindsight in combining only the shape of the parallel groove of Furukawa with the light guide plate of Aihara, because Furukawa uses tabular light guides having increasing indices of refraction to achieve a uniform brightness, whereas the light guide plate of Aihara is formed of a single material (with a uniform index of refraction) (App. Br. 11-12).

With respect to the rejection of claims 20 and 24, Appellant argues that Kunishige does not teach a parallel groove which accommodates a bar-like light source, an end portion of which is narrowed toward said rectangular light exit surface. According to Appellant, Kunishige’s light source is not accommodated within the groove (App. Br. 15).

Appellant’s contentions, and the Examiner’s findings, present us with the following issues:

Would it have been obvious to modify the light guide plate of Aihara to include the narrowed parallel groove taught by Furukawa, given Furukawa’s use of tabular light guides having increasing indices of refraction?

Does Kunishige teach or suggest a parallel groove that accommodates a bar-like light source and is formed at substantially a center of a thick

portion of a rectangular light exit surface, the end portion of the parallel groove being narrowed toward the rectangular light exit surface?

PRINCIPLES OF LAW

Section 103(a) forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.”

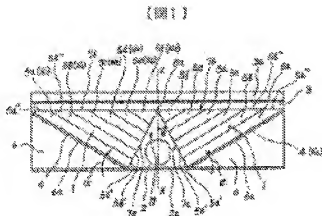
KSR Int'l Co. v. Teleflex, Inc., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 550 U.S. at 407, (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”)

ANALYSIS

CLAIMS 1-3, 5-18, 21, 23, 25, AND 26

Appellant’s argument that Aihara and Furukawa are not properly combinable to achieve the invention under appeal, because Furukawa teaches the use of tabular light guides having increasing indices of refraction in conjunction with a parallel groove having an inverted V-shape, is persuasive to show that the Examiner erred (App. Br. 11-12).

Furukawa Figure 1 is reproduced below:



Furukawa's Figure 1 illustrates a planar illumination optical waveguide device.

We find that Furukawa's teaching of tabular light guides having increasing indices of refraction (5a-5f) is inseparable from Furukawa's teaching of a parallel groove that narrows in the direction of the light exit surface (5a''). We conclude that the person having ordinary skill in the art would therefore not have been motivated to modify Aihara to include such a narrowing parallel groove in Aihara's apparatus having a light guide plate formed of a single material with a uniform index of refraction (Aihara Fig. 1).

We conclude that the Examiner erred in rejecting claims 1-3, 5-18, 21, 23, 25, and 26 as obvious over Aihara in view of Furukawa. We will not sustain the rejection.

CLAIMS 4, 19, AND 22

Claims 4 and 19 depend ultimately from independent claim 1, and claim 22 depends from claim 21. We have reviewed Kunishige, Ide, and Yokoyama, and find that they do not remedy the deficiencies of claims 1 and

21, noted *supra*. Accordingly, we will not sustain the rejection of claims 4, 19, and 22, for the same reasons given with respect to claims 1 and 21, *supra*.

CLAIMS 20 AND 24

We agree with Appellant that Kunishige does not accommodate bar-like light source 3 within narrowing parallel groove 7a (App. Br. 15). Kunishige Figure 1 illustrates that light source 3 is contained within parallel walls that do not narrow. The Examiner appears to concede that Kunishige does not teach a parallel groove that narrows as the claims require, by stating that the end portions of the parallel groove are narrowed by “0%” with respect to a center line of the parallel groove (Kunishige Fig. 2; Ans. 42).

Kunishige thus does not teach or suggest all the limitations of claims 20 and 24. We will not sustain the Examiner’s § 103 rejection.

CONCLUSION

It would not have been obvious to modify the light guide plate of Aihara to include the narrowed parallel groove taught by Furukawa, given Furukawa’s use of tabular light guides having increasing indices of refraction.

Kunishige does not teach or suggest a parallel groove that accommodates a bar-like light source and is formed at substantially a center of a thick portion of a rectangular light exit surface, the end portion of the parallel groove being narrowed toward the rectangular light exit surface.

ORDER

The Examiner's rejection of claims 1-26 is reversed.

REVERSED

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